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ABSTRACT

A number of initiatives have been successful in helping teachers change their knowledge and practices in teaching mathematics. This paper reports on the results of a reform effort using curriculum materials as a vehicle for change. The professional development program called "Insights and Investigations" incorporated four types of professional development experiences. Teachers met monthly in grade-level sessions with one of three mathematics educators on the Delaware SSI/Project 21 staff in order to get collegial support and encouragement as they implemented "Investigations" in their classrooms. According to the teacher participants, the combination of utilizing "Investigations" curriculum units in the classroom, having the opportunity to do "Investigations" with their colleagues before teaching it in the classroom, reflecting on their teaching and on student learning through written reflections and discussions, and sharing with colleagues, did result in their learning to teach mathematics differently and more effectively. Appendices contain data collection instruments. (ASK)

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Learning to Teach Math Differently

The Effect of "Investigations" Curriculum on Teachers' Attitudes and Practices

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A paper presented at the Annual Conference of the American Education Research Association
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permission.

Encouraged by the enthusiasm of teachers who had utilized units from Investigations in Number, Data, and Space (Various authors, 1994, 1995, 1996) in their classrooms, I approached the mathematics supervisor of a local school district to suggest that we establish a professional development initiative for elementary teachers in the district. The teachers who had used the "investigations" units with their students liked the curriculum materials because they felt that their students were learning more mathematics and they felt that they, as teachers, were better informed about their students' learning and thinking. Just as students were, according to the philosophy of the Investigations authors "learning mathematics by doing mathematics," we reasoned teachers would learn to implement the NCTM Standards by teaching lessons from a curriculum based on investigation, problem solving and reasoning.

Theoretical Background

A number of initiatives have been successful in helping teachers change their knowledge and practices in teaching mathematics. These include Cognitively Guided Instruction in which teachers participated in six-week summer institutes focused on the development of children's mathematical knowledge (e.g., Carpenter, Fennema, & Franke, 1996), the Purdue Problem Centered Mathematics Project (e.g., Wood, Cobb, Yackel, & Dillon, 1993) which provided teachers with sets of problems to be used in the classroom, and Teaching to the Big Ideas (e.g., Schifter & Bastable, 1995) in which teachers participated in summer institutes and school year seminars focused on developing and understanding their own mathematical knowledge. These projects, while successful in effecting classroom reform, are quite costly in terms of per-teacher

impact. This proposal reports the results of a more modestly-funded reform effort using curriculum materials as a vehicle for change.

The professional development program, "Insights and Investigations" incorporated four types of professional development experiences identified as being important components of professional development for teachers. The four tools utilized were (a) demonstration and discussion of "investigations" for teachers to implement in their classrooms, (b) the "Investigations" curriculum materials (Investigations in Number, Data, and Space for teachers of grades two through five and Mathematics in Context units for teachers of grade six) units¹ which were given to teachers at each monthly meeting, (c) opportunities for teachers to share and discuss their experiences in implementing the "investigations" and to share and discuss student work from the "investigations", and (d) opportunities for teachers to write reflections about their experiences implementing the "investigations" and about their observations of student learning (Clarke, 1994).

Method

Design of the Professional Development Program

Teachers met monthly in grade-level sessions with one of the three mathematics educators on the Delaware SSI / Project 21 staff. Each two-hour meeting was divided more or less evenly between the leader engaging the teachers in some of the activities from the "investigations" unit that would be distributed that month and teachers sharing their experiences and student work that

¹For simplicity the term "investigations" will be used to refer to the curriculum units utilized in the monthly meetings and received by the teachers. For teachers of grades two through five, these were Investigations in Number, Data, and Space units, developed by TERC and published by Dale Seymour. Sixth-grade teachers used units from Mathematics in Context, published by Encyclopedia Britannica.

they had collected from "investigations" that they had implemented during the preceding month. Teachers were asked to attend with a grade-level partner from their buildings. We felt that this would provide teachers with collegial support and encouragement as they implemented "investigations" in their classrooms. In addition to receiving the set of "investigations" units, teachers were given the opportunity to earn graduate credit from the University of Delaware or inservice credit from the state's Department of Public Instruction. These teachers were asked to implement part of at least three "investigations" during the year, to write reflections on their implementations, to keep a log of the learning of two students in their classrooms, and to write a plan and rationale for implementing "investigations" curriculum in the future. These teachers also attended an additional sixteen hours of class during the summer.

Implementation of the Professional Development Network

The professional development network was a collaborative effort by an urban/suburban school district in Delaware and the Delaware Statewide Systemic Initiative / Project 21. The school district provided the curriculum units for the teachers, meeting sites and refreshments, and other logistical support. The three mathematics education staff members of Project 21 shared the responsibilities of leading the professional development sessions with each staff member meeting monthly with two grade-level groups.

Teachers experienced various difficulties in implementing the "investigations" units in their classrooms. Because the units were given out one by one (to encourage regular attendance) teachers sometimes complained that they were having difficulty incorporating the units into their schedules. The author provided teachers with charts correlating the district textbooks with the "investigations" units. Unavailability of manipulatives was a complaint made by some teachers.

The district provided some money to teachers for the purchase of manipulatives. In some schools the teachers found out who had spinners, snap cubes, or other needed equipment and arranged to use those materials. The winter of 1995-1996 was a severe one and having so many snow days caused teachers to fall behind in their planned teaching schedules. Finally, the district implemented a new policy of administering standardized tests in October and March, and pressure was put on teachers and schools to show an increase in scores. Many teachers felt that they must take time to prepare their students for the standardized tests and that this preparation precluded use of the "investigations" units during the two months prior to the March test.

In spite of these difficulties, participation levels remained high with 49 teachers participating throughout the year and 28 of them attending the summer sessions and receiving graduate credit.

Data Sources

Information was collected at each monthly meeting from the teachers in order to provide a consistent source of data of teachers' changing attitudes and practices. At each meeting teachers were asked to write a "reflection" for ten minutes that answered a specific question or questions. The same questions were used for all grade levels in a given month. In October and May, a questionnaire with open-ended questions was administered (Appendix 1). The questions were the same for both months with the exception of Question 8. In October teachers were asked to complete "Three things I hope to learn to do better . . . "; in May, the prompt read, "Three things I have learned to do better in teaching math . . . ". Fifty-eight teachers completed the October questionnaire and 35 teachers completed the May questionnaire. Because some teachers dropped out during the year, some teachers came in after the first meeting, and some teachers missed the

May meeting, we obtained 27 matching sets of responses from teachers who had completed both the October and May questionnaires.

In addition, in January 47 teachers completed a reflection in which they were asked to identify the aspects of the network meetings that were "most helpful" and "least helpful" and to state which activities they would like to do more of and which they would like to do less of (Appendix 2). They were also asked for suggestions for the future. In May 42 teachers completed the district's standard evaluation form for professional development activities (Appendix 3). Teachers' responses to each of these four written instruments were compiled verbatim in tables and charts. Their written responses to these instruments provide the primary sources of data for this paper. The teachers' written reflections about their implementations of the "investigations" and their written rationales for using "investigations" provide additional examples of teachers' opinions about the professional development experience and its effect on their teaching and on students' learning.

In addition to the written data collected at network meetings, the author kept anecdotal notes of teachers' comments during meetings and of comments they made to her on other occasions.

Data Analysis

The teachers' responses to the four questionnaires were compiled verbatim into tables. An analysis of teachers' responses to every question on the four questionnaires is beyond the scope of this paper. The paper will report, analyze and discuss the responses to the following questions:

"In math class students spend most of their time" (Question 5 October/May)

"Three of my strengths in teaching mathematics are:" (Question 7, October/May)

"Three things I would like to learn to better are" (Question 8, October)

"Three things I have learned to do better are" (Question 8, May)

"Please reflect on the materials, activities during meetings, your implementation of

Investigations with your students. (January reflection)

Helpful . . .

Not Helpful . . .

"I'd like to do more of . . ."

"I'd like to do less of . . ."

"Other suggestions" (January reflection)

"Will you be able to utilize the skills/awareness/techniques gained in the workshop?"

(Question 3, School district evaluation, May)

"What follow-up will you need to support implementation of ideas acquired in this

workshop?" (Question 6, School district evaluation, May)

These questions were selected because they yield information on changes in teachers' perceptions of their classroom practices and student learning and on their opinions about the benefits of the curriculum units and the professional development network meetings.

Limitations of the Data

All the data discussed here is self-reported by the teachers. It does, nevertheless, yield information about teachers' perceptions of their teaching, of their students' learning, of the value of the "investigations" units to them in their teaching, and of the value of the professional development network to them as teachers. Not all teachers completed all of the four

questionnaires, but most teachers completed three of the four instruments as indicated in Table 1, thus indicating a high degree of overlap among the participants completing each of the instruments. Where the instruments report similar kinds of data, they can be seen as supporting each other. In any case, the source of all data discussed will be identified in this report.

Results

The professional development experience was designed to introduce teachers to "investigations" curriculum materials, to encourage teachers to implement at least some part of the "investigations" in their classrooms, to focus their attention on student work, and to reflect with their colleagues on what and how their students learned from "investigations" based instruction. Teachers' written responses not only indicate an appreciation for each of the components of the experience, but also suggest changes in teachers' views of mathematics, teaching mathematics, student learning, and student abilities.

Teachers' assessment of the components of the professional development experience

Teachers expressed a high degree of satisfaction with the professional development experience and a desire to continue it during the following year. Of the 42 participants completing the school district's evaluation in May, 42 circled "Yes" in response to Question 3: "Will you be able to utilize the skills/awareness/techniques gained in the workshop." In response to Question 6: "What follow-up will you need to support implementation of the ideas acquired in this workshop," 29 of the 42 teachers stated that they would like to continue meeting to share their experiences in implementation and to learn more about the "investigations" units. The following comments are typical:

A support group in order to encourage us and keep us on track (Second-grade

teacher)

Would like to continue next year to meet for support and ideas with [the leader] and "the group" (Second grade teacher).

Would really like to see this continue next year as we work through more and more of what we've learned (Fifth grade teacher).

A few meetings next year to discuss success and failures with units would be helpful (Sixth grade teacher).

More meetings. As long as teachers in my building are doing the program this need will be met. The collaborative aspect of the program was the most worthwhile aspect of this project (Fourth grade teacher).²

The February reflection/questionnaire was designed as a formative evaluation to find out what teachers thought about the activities they were participating in during each session. The 47 teachers wrote 141 responses to the "Helpful" query. Of these 141 responses 55 referred to the previewing of the "investigations" and trying out of the activities during the monthly meetings, 36 referred to the "investigations" units themselves and 30 referred to the time spent sharing student work and experiences. The 36 comments under the "Not helpful" category referred to implementation difficulties such as not having manipulatives, difficulties in coordinating with the textbook, not having enough paper for copies, and the number of snow days experienced. In response to "I'd like to do more," teachers listed 73 comments. Of these comments 25 indicated

²The professional development network has continued with one of the original leaders and two of the teacher participants as leaders. The meetings are less frequent, but follow the same format as that described here. In the second year 30 teachers, consisting of veterans and newcomers participated. In the third year 40 teachers, mostly new to the network, are participating.

that they would like to do more trying out of and discussion of the contents of the investigations, 17 stated they would like to do more classroom implementation, and 13 asked for more sharing of student work and experiences. In response to the category, "I'd like to do less," three teachers indicated they would like less sharing of student work and two indicated they'd like less discussion of the content of the "investigations." Teachers, thus, indicated that they valued the three components of the professional development workshops (a) collaborative trying out and discussion of the "investigations beforehand, (b) implementation of "investigations" in the classroom, and (c) sharing and discussing experiences and student work.

Changes in teachers' classroom practices and attitudes towards teaching mathematics

Teachers were asked to fill out the same reflection in October and May which consisted of eight open-ended questions. The only difference between the two forms was in Question 8 which in October read, "Three things I would like to learn to do better in teaching mathematics are . . ." and "Three things I have learned to do better in teaching mathematics are . . ." in May. The reflection also asked teachers to identify reasons for teaching mathematics, the qualities students need, to succeed in mathematics, to describe their actions during mathematics lessons, and to describe students' activities during mathematics lessons. The responses to the 27 complete pairs of the October and May reflections obtained were compiled into tables that listed the responses for each question. These tables were then examined for evidence of changes in teachers' perceptions of mathematics, of how they teach mathematics, and of their perceptions of students' learning.

Attitudes towards mathematics. Teachers responses' to Question 7, "Three of my strengths in teaching mathematics are:" gave limited information about the teachers' attitudes

towards mathematics. In October eight teachers wrote "enjoying mathematics" was one of their teaching strengths, and three other teachers mentioned that their math phobias were a strength because they understood how students felt. In May eleven of the teachers listed an enjoyment of mathematics as one of their strengths.

Comments made by teachers at other times suggest that some teachers were beginning to understand and value mathematics more. One fifth-grade teacher stated in the January meeting that she "didn't like math and spent as little time as possible on it," but that since she had begun using some of the investigations in her classroom she had "tried strategies with my kids that I would never have tried in the past. I find myself going that extra mile to really understand something."

The October/May reflections also provide some evidence that teachers were developing a different view of what mathematics is. In October five of the 27 teachers mentioned specific procedures, like "3 digit subtraction," or "place value" that they hoped to learn how to teach better in response to Question 8. In May, no one mentioned specific procedures, but twelve teachers mentioned that they had learned more about math concepts and that they had begun to attend more to their students' understanding of math concepts.

The rationales for using "investigations in the classroom" that teachers wrote at the end of the summer workshops also give some indication of teachers' understanding of mathematics as a way of thinking and reasoning. A fifth grade teacher wrote, "The goal is to help students develop strategies instead of the mindless applications of procedures." Another fifth grade teacher wrote that as her students began "to reason and to develop number sense, they no longer saw mathematics as a series of complicated steps." A fourth grade teacher wrote, "I have given my

students the right to use their prior knowledge to construct their own understanding of mathematical challenges.”

Attitudes about students and learning. During the course of the workshop sessions and classroom implementations of the “investigations,” many of the teachers changed their attitudes about the abilities of their students to think about and learn mathematics.

Responses to Question 8 of the October/May reflection suggested a pattern of differences in many teachers’ attitudes about students’ thinking and learning of mathematics. From the teachers’ written responses definitions for two views of students were developed. The first was an attitude of the teacher as the “prescriber for students in need of remediation.” In this category teachers’ responses indicated that they were concerned with meeting the needs of “slow learners,” “motivating students who don’t have the same enthusiasm that I do,” “helping all children feel they can do math,” or “meeting specific stumbling block needs.” Teachers’ responses in this category indicated a teacher’s perception that s/he should provide a prescription to direct students’ learning, either generally or for a specific topic. The contrasting category was “respect for student ideas.” Statements by teachers in this category included statements such as “stand back and let the students delve into the math at hand,” “allow students to use their own methods,” “listen more to students’ thoughts and conclusions,” or “encourage students to express their methods.” The 27 sets of October/May responses to “Three things I have learned to do better” were examined for evidence of either of these two attitudes. Of the 54 responses, 38 were identified as suggesting either of these attitudes about students. The author and another workshop leader read the responses and discussed the two categories prior to rating them. We independently rated the responses, achieving agreement on 50 of the 54 responses for an inter-

rater reliability of 0.93. We then discussed the four other responses and agreed on coding for those responses.

In October 17 of the 27 teachers made statements indicating that they wanted better "prescriptions" for their students, and only four of the teachers made statements that could be coded as indicating respect for students' thinking about mathematics. In May 13 of the teachers made statements that could be coded as indicating respect for students' thinking. These included "how to listen to students' thoughts and conclusions", "provide opportunities for students to explore", and "step back and let the children work the problems." In May just four of the teachers made statements that could be coded as showing an attitude of directing students' thinking rather than respecting students' thinking. Examples of these include the statements, "explain math in understandable terms", and "guiding kids' thinking through the activities", and "I have improved in motivating students." The data suggest that although many of the teachers began the program hoping to learn how to remediate for children who were having difficulty with mathematics, a large number of the teachers developed a stronger respect for students' thinking as a result of teaching the "investigations" in their classrooms.

An example of how teachers began to change their perceptions of students' thinking occurred in the December session. One of the fifth-grade teachers was keeping her log on the thinking of two students, one of whom she considered to be "strong" and the other as "weak" in mathematics. She said that the "investigations" had provided many opportunities for the "weak" student to show leadership in thinking and discussing mathematics and she was not sure at first where he had "learned to do that." She had thought that the weaker student was "picking it up from his partner," but when the partner missed several lessons because of band rehearsals, she

was surprised by the "problem-solving abilities and leadership" displayed by the "weak" student. Another example comes from the rationale for using "investigations" curriculum written by a second-grade teacher. After stating that participating in the workshops had "changed the way I teach and it changed my mathematical beliefs," the teacher wrote,

The [students] began to see and use new number patterns for Number of the Day, and they began sharing their strategies which they recorded in their log books. I also chose to record some of these new strategies on the overhead. Gradually, students began to take greater risks with these strategies when they realized there was more than one way to record the number of the day. . . . They began to encourage each other to "think of another way." The students also became very excited when someone in their group during an investigation invented a completely new way--a way the teacher had not even thought of!

I also learned not to stop a child in the middle of sharing a "think aloud" strategy even when I thought it might be going in the wrong direction. The answer was usually correct. *I was made to realize how intricate and sophisticated the minds of second graders can be if we let them think mathematically and then get out of their way!* [emphasis added]

How students learn mathematics. Evidence that teachers had become more aware of the importance of students' sharing their ideas and problem solving strategies while learning mathematics comes from teachers' responses to Question 4 of the October/May reflection. This question was, "In my mathematics classes students spend most of their time . . ." A pattern of contrasts seemed to emerge from comparison of the October and May responses. Teachers in

October described what their students did in more general terms and with much less emphasis on student discussion than the teachers did in May. Each set of paired responses was categorized as "more", "equal", or "less". If the teacher described students' action during math class more specifically or listed more specific activities such as "discussing strategies" or "explaining" in May than in October, that pair of responses was coded as "more." For example, the following pair was coded "more".

Oct: In cooperative groups. At centers with manipulatives

May: Predicting, discussing, thinking, problem solving, sharing, writing their math logs.

If the May response was less specific or descriptive than the October response the pair of responses was coded "less." For example, the following pair of responses was coded "less".

Oct: experimenting, collecting and sharing, explaining knowledge

May: using hands on manipulatives

If there was no difference between October and May, the pair of responses was coded "equal."

An example of a pair of responses coded equal is

Oct: engaged in learning activities

May: working on a variety of activities.

To test for inter-rater reliability the author and another workshop leader independently coded each pair of 26 responses to this question. They coded 24 of the 26 pairs the same way for an initial inter-rater reliability of 0.92. They discussed the two pair of responses on which they disagreed and came to agreement on them.

Fourteen of the 26 teachers wrote more specific descriptions of the mathematical activities of their students in May than in October. One teacher who described her students as

"actively participating in a variety of activities" in October, in May described their activities as "working together, making discoveries and observations, implementing knowledge gained into real life situations." A second grade teacher who described her students in October as "doing hands on practices to better understand and transfer concepts," in May wrote that students spent their time "manipulating items and discussing and writing strategies--now, thanks to those TERC materials." The fact that teachers began to mention student actions such as "sharing strategies and techniques," or "discussing problems with peers--equal time of discussion, problem solving and calculations," suggests that teachers were more aware of the importance of these actions for students' learning and also that their students may indeed have spent more time "predicting, discussing, and thinking," than they had previously.

The responses of eleven teachers were coded as "equal" and the response of only one teacher was coded as being "less" specific. The fact that the teachers attending the workshops were volunteers who were interested in obtaining and learning about "investigations" curriculum may explain why a number of them wrote responses that were coded "equal." One of the teachers whose responses were coded "equal" wrote in October, "doing problem solving and using manipulatives." In May, she wrote, "doing cooperative group activities or paired, using manipulatives and real life situations." Seven of the 11 teachers' whose responses were coded "equal" mentioned either hands-on activities with manipulatives or solving problems and discussing problem solving strategies in both October and May. In May 20 of the 26 responses to Question 4 specifically mentioned students' "explaining strategies", "exploring", "discussing" or "coaching others."

The rationales for continuing to use "investigations" in the classroom by the teachers

provide examples of the teachers' growing appreciation for the importance of students' discussing their ideas. Three examples follow:

I learned math by the tried and true traditional methods of memorization, skill work, theories and algorithms. There was only one way to solve a problem, and this method was presented by the teacher, and meticulously modeled by the robot students. . . . TERC activities thrive on cooperative learning. There is so much supplemental learning that takes place when children work in a group. When the class was working on finding polygons within a Picasso picture, spatially oriented children assisted others to see the shapes. One child decided the way to determine the exact amount of polygons was to cut out the individual shapes. So out came the scissors, and the cutting began (Fifth grade teacher).

When we began using the TERC materials that I received in class, we used the number puzzles. The first thing that I noticed when I taught the unit was that the students' responses drove the lesson. We had the opportunity to discuss how division is related to subtraction and how multiplication is nothing more than repeated addition. In the beginning, I noticed that the children were having some difficulties describing their thought processes because they had never really been asked to do so before. . . . I could see my children developing some number sense. They were no longer seeing math as just simply a set of complicated steps. The children were actually able to reason and respond to questions in a logical manner (Fifth grade teacher).

“ . . . the greatest experiences gained by the students came through the discussions of their strategies employed. The sharing and demonstrating of both simple and complex

strategies allowed the children to understand there is more than one way to solve problems. It also stimulated others to think on a higher level and to try more than one way to solve the problem. The growth that occurred through sharing and combining strategies enabled the children to tackle problems with confidence. The sharing of ideas also increased their self-esteem and their respect for their classmates" (Second grade teacher).

These descriptions by the teachers of students' activities together with the previously discussed comments indicating respect for students' ideas indicate a change in the teachers' appreciation of the role of student discussion in the development of mathematical understanding.

Discussion

By teaching from curriculum units that engaged students in mathematical investigation and exploration, discussion, and sharing strategies and by reflecting with their colleagues on their students' work, teachers began to teach differently and to talk about mathematics and student learning differently. Some of them developed more positive attitudes about mathematics and more interest in mathematics. Many of them began to speak of mathematics as "problem solving" and "as developing and sharing strategies for solving problems."

By engaging students in "predicting, discussing, problem solving, sharing strategies, and writing in their math logs," and exploration and investigation, many of the teachers became more aware of the importance of these kinds of classroom activities for students and more capable of utilizing them in their classrooms.

Furthermore, as teachers listened to students' strategies and reasoning, they developed a greater appreciation for the reasoning and problem solving abilities of their students. Many of

them developed greater respect both for the ideas of their students, and also for the ways that students were able to help each other learn.

The combination of utilizing "Investigations" curriculum units in the classroom, having the opportunity to do the "investigations" with their colleagues before teaching it in the classroom, reflecting both on their teaching and on student learning both through written reflections and discussions and sharing with colleagues, according to the teacher-participants, did result in their learning to teach mathematics differently and more effectively.

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Table 1

Number of participants completing data collection instruments

Instruments completed	Number of teachers completing
All four: October, February, May, May	23
Three or more	41
Two or more	49
October - May , reflection	27
February	46
May, district evaluation	42
May, reflection	35

Appendices

Appendix 1 October Reflection

Appendix 2 May Reflection

Appendix 3 February Reflection

Appendix 4 District Professional Development Evaluation

Reflection One -- October

Complete the following:

1. "I teach mathematics because"
2. "The most important reason for knowing mathematics is "
3. "In order to learn mathematics a student must"
4. "Compared to other school subjects, mathematics is"
5. "In my mathematics classes, students spend most of the time "
6. "In mathematics class I spend most of my time"

Three of my strengths in teaching mathematics are:

Three things I would like to learn to do better in teaching mathematics are:

Reflection Seven -- May

Complete the following:

1. "I teach mathematics because
2. "The most important reason for knowing mathematics is
3. "In order to learn mathematics a student must
4. "Compared to other school subjects mathematics is
5. "In my mathematics classes, students spend most of the time
6. "In mathematics class, I spend most of my time
7. "Three of my strengths in teaching mathematics are
8. "Three things I have learned to do better in teaching mathematics are

Please put your name on the back. Thanks!

CSD Reflection 4

Please reflect on the materials, activities during meetings, your implementation of Investigations with your students.

Helpful:

Not Helpful:

I'd like to do more:

I'd like to do less:

Other suggestions:

Grade _____ **Name** _____ **(optional)**

CHRISTINA SCHOOL DISTRICT
STAFF DEVELOPMENT EVALUATION

Workshop Title: _____ Date: _____

Instructor/Leader: _____

PLEASE REACT AND COMMENT WHERE APPROPRIATE

1. Were the objectives of the workshop satisfactorily accomplished? _____ YES _____ NO
2. Were effective instructional techniques modeled in the workshop? _____ YES _____ NO
3. Will you be able to utilize skills/awareness/techniques gained in the workshop? _____ YES _____ NO
4. Overall assessment of workshop:
(Rate on a scale of 1 to 5 with "1" being low and "5" being high) _____
5. Overall assessment of presenter's effectiveness: (1 to 5) _____
6. What follow-up will you need to support your implementation of ideas acquired in this workshop?
7. If this workshop is offered again, what changes would you recommend?
8. Any additional comments?